

What is claimed is:

*508* > 1. A method for distilling a raw material liquid containing (meth)acrylic acid substantially free from azeotropic solvents, which comprising;

*B7* 5 subjecting gas phase catalytic oxidation reaction of propylene and/or acrolein with a molecular oxygen-containing gas or by gas phase catalytic oxidation reaction of at least one selected from the group consisting of isobutylene, t-butyl

10 alcohol and methacrolein with the molecular oxygen-containing gas to form a mixed gas;

feeding the resulting mixed gas to a (meth)acrylic acid collection column wherein materials containing (meth)acrylic acid are collected with a collection agent; and

15 feeding to a distillation column the raw material liquid which temperature is substantially equal to that of an entrance place in the column to distillate.

2. A method according to claim 1, wherein a concentration 20 in the raw material liquid is not less than 85% by weight, based on the weight of the liquid.

3. A method according to claim 1, wherein the column is at least one selected from the group consisting of an azeotropic 25 distillation column for a (meth)acrylic acid solution collected by the collection agent; an aldehyde distillation column for the raw material liquid treated by an aldehyde treating agent; and a distillation column for separating high boiling point materials for the raw material liquid.

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4. A method according to claim 1, wherein a temperature of the raw material liquid is adjusted by heating or cooling.

5. A method according to claim 1, wherein a temperature  
of the raw material liquid to be fed (T0) and a temperature  
of the entrance place in the column (T1) fulfill the following  
5 formula (1a):

$$0^{\circ}\text{C} \leq T_0 - T_1 \leq 30^{\circ}\text{C} \quad (1a).$$

6. A method according to claim 1, wherein a temperature  
of the raw material liquid to be fed (T0) and a temperature  
10 of the entrance place in the column (T1) fulfill the following  
formula (1b):

$$0^{\circ}\text{C} \leq T_0 - T_1 \leq 20^{\circ}\text{C} \quad (1b).$$

7. A method according to claim 1, wherein a temperature  
15 of the raw material liquid to be fed (T0) and a temperature  
of the entrance place in the column (T1) fulfill the following  
formula (1c):

$$0^{\circ}\text{C} \leq T_0 - T_1 \leq 10^{\circ}\text{C} \quad (1c).$$

20 8. A method according to claim 1, wherein a fluctuation  
range ( $\Delta T_0$ ) of temperature (T0) of the raw material liquid  
is within 10°C.

9. A method according to claim 1, wherein a fluctuation  
25 range ( $\Delta T_0$ ) of temperature (T0) of the raw material liquid  
is within 5°C.

10. A method according to claim 1, wherein a fluctuation  
range ( $\Delta T_0$ ) of temperature (T0) of the raw material liquid  
30 is within 3°C.

11. A method according to claim 4, wherein the heating

or cooling is performed by a heat exchanger.

12. A method according to claim 4, wherein the heating or cooling is performed based on the result that a temperature 5 of the entrance place in the column is measured.

13. A method according to claim 1, wherein a temperature of the raw material liquid to be fed to the column is lower than that of a bottom part in the column.

10 14. A method according to claim 1, wherein the raw material liquid is divided into two or more, and then fed to the column.

15, 15. A method according to claim 1, wherein the collection agent is water or a process wastewater.

16. A method according to claim 15, wherein (meth)acrylic acid is recovered employing an azeotropic solvent by separating the collection agent therefrom.

20 17. A method according to claim 16, wherein the azeotropic solvent is at least one selected from the group consisting of diethyl ketone, methyl propyl ketone, methyl isobutyl ketone, methyl-t-butyl ketone, n-propyl acetate, toluene, 25 heptane, and methylcyclohexane.

18. A method according to claim 1, wherein the column is maintained under the following conditions:

Operation pressure: 10 to 400 hPa

30 Top temperature of the column: 45°C to 110°C

Temperature at which the raw material liquid is fed to the entrance place in the column: 40°C to 120°C

Bottom temperature: 50°C to 190°C

Reflux ratio: 0.1 to 5.

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